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KURT SEVERIN

IN BRAZIL'S BACK COUNTRY, THE "CABOCLO" SCRATCHES AT THE JUNGLE FOR A LIVING

An opportunist and often a squatter, he may make a clearing and raise corn and hogs. When the plot's fertility is exhausted, he moves on. Again, he may roam the forests collecting commercial nuts, tapping rubber trees, and otherwise profiting by the land's tropical bounty (page 11). "Caboclos," an important group in the "sertões" (empty places) of Brazil, are descended from intermarrying Indians and Portuguese. The term is sometimes applied to any non-landowning rural worker.

Sydney's Huge Harbor to Welcome U. S. Fleet

THE goodwill squadron which the U. S. Navy proposes to send to Sydney, Australia's largest port, will find plenty of room to anchor in the tremendous, irregular harbor.

Reaching 13 miles inland, the harbor's indentations form a scenic shore line 188 miles long. A dozen oak leaves would not create so unsymmetrical a pattern. "I have had the satisfaction of finding the finest harbor in the world," wrote Captain Arthur Phillip, R.N., after its exploration in 1788.

Harbor Bridge Links Shores

Villages quickly developed along inlets inside the port's mile-wide entrance. They became towns and cities, merging like London into the present metropolis of more than a million and a quarter people.

Sydney has some Venetian aspects. Houses with red-tiled roofs spill over hillsides down to the water's edge. Instead of gondolas, a great fleet of ferryboats serves the far-flung waterside community. By 1932, 40,000,000 fares were being collected by cross-harbor ferries alone. Then the Harbor Bridge (illustration, page 2) was built, looping 400 feet above the water at its highest point.

Never was a harbor more mingled in the life of a city. Residents are beach-bronzed amphibians. Two beaches recorded a joint annual total of 19,000,000 bathers. Youngsters paddle in tiny boats of discarded corrugated roofing. On holidays hundreds of canoes are afloat. White sails of 300 pleasure craft may fleck the island-studded harbor at one time.

The sailboats are dwarfed by the great ocean liners regularly making the port. They renew the wake of the early clipper ships. Pastoral products long dominated exports—meat, tallow, hides, sheepskins, and wool. Sydney's Royal Exchange is now the largest wool-selling center in the world. More than a million bales are auctioned annually.

Victorian Appearance Fading

Sydney's factories grew rapidly during the war. Woolen mills expanded to an annual output of 750,000 yards. A hat factory increased consumption of Australia's most abundant natural resource—rabbitskins.

The city is losing its Victorian appearance. Old buildings are being replaced by simple concrete-and-stone business blocks. All building is limited in height to 150 feet. But Gothic churches, a Renaissance town hall, a Byzantine market, Tudor Government House, and a classic art gallery survive.

One of the famous sights for Southern Hemisphere navigators is the entrance to Sydney's harbor. The Sydney heads, great sandstone cliffs, rise 200 feet above the water on either side. Between them a wide 80-foot-deep channel runs. Around the city is oval-shaped Sydney basin, a geographic area along the coast separated from the rest of Australia by mountains.

Officially, Sydney's harbor is known as Port Jackson. It was so named

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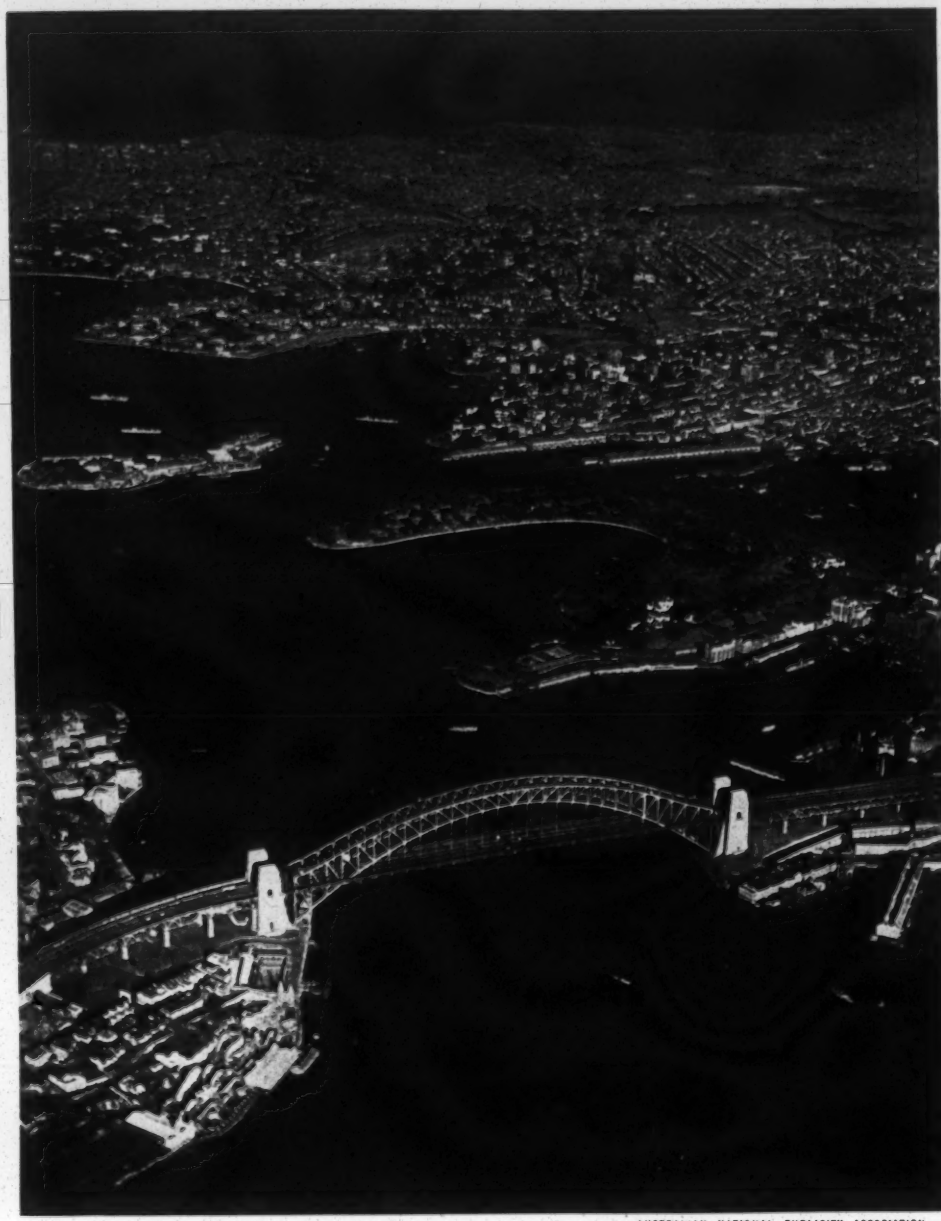


AUSTRALIAN NATIONAL PUBLICITY ASSOCIATION

SYDNEY'S LONG HARBOR, A DROWNED RIVER VALLEY, TWISTS THIRTEEN MILES INLAND

From the Pacific (background) the sprawling Australian bay extends westward far beyond the giant span. Nearly a third of a mile long, Harbor Bridge is wide enough for six lanes of automobiles, four electric railway lines, and two sidewalks. Sydney's center adjoins the south end of the bridge (right), beyond which lies Circular Quay, the "Sydney Cove" where the original settlers landed. On the parklike point stands the residence of the governor of New South Wales, of which Sydney is the capital. The general setting of the Australian metropolis will recall San Francisco for many American sailors on the forthcoming goodwill visit of the United States Navy (page 3).

Portugal Still Rules Macau on China Coast

PORTUGAL, which last month joined the parade of nations renouncing extraterritorial rights in China, still controls Macau (Macao), its 400-year-old colony on the South China Sea coast.

Macau covers the hill-dotted tongue of land projecting south from a peninsula which was once an island. A narrow isthmus connects the five-square-mile area with the mainland. Also included are Taipa and Colôane, two small islands near by. Sea walls and breakwaters have given the irregular area a geometric border. Land reclaimed from the sea has made it much larger than the original rocky point where the Portuguese seafarers settled in the mid-16th century.

East Meets West in Architecture

Oldest European settlement in the Far East, Macau was the first port opened to Western trade with China. It has an Old-World charm and a moderate climate (a 74-degree mean annual temperature) that have made it a popular pleasure resort. Before the war, two-thirds of a million people came every year to enjoy the scenery and the cool breezes from the South China Sea which gave the colony the reputation of having the best climate in southeast Asia. The population numbers more than a quarter of a million and of these fewer than 10,000 are Portuguese.

A broad avenue, the Praia Grande, follows the curving eastern shore line of the peninsula. Government buildings and large, beautiful homes, many of south European design, rim its landward edge. Sprawling banyan trees paralleling the sea wall cast ragged shadows across the wide roadway. Houses terrace the hills. Their pastel walls make swatches of pink, blue, and yellow amid the vivid green of luxuriant gardens. Other buildings, ancient and modern, Oriental and Occidental, face square parks where oleanders bloom and bamboos throw lacy shade on rickshas waiting for passengers. Ancient Buddhist temples rear curling tiled roofs near Christian churches.

Gambling Once Financed the Government

A rocky grotto, a memorial to the great Portuguese poet, Luis de Camoëns, is a mecca for tourists with literary tastes.

Commercial docks are on the west side of the town. The water front, with a Western appearance, masks a typically Chinese neighborhood. Restaurants and shops line narrow, crooked streets. In numerous gambling establishments fan-tan players refresh themselves with tea and roasted watermelon seeds. Macau has been called "the Monte Carlo of the Orient." It once had the only colonial government financed by gambling.

Before the war, this town at the mouth of the Canton River was one of the busiest fishing ports on the China seas. Nearly 2,000 seagoing junks and hundreds of smaller craft brought in from surrounding waters sole, herring, halibut, shark, and eel. Crab and lobster added to the seafood catch which, salted, ranked high on Macau's export list.

In addition to fisheries, Macau has factories which produced for export firecrackers (illustration, page 6), preserved fruit, tea, tobacco, and

by Captain James Cook, the English explorer. He sighted the harbor 18 years before Captain Phillip, who thoroughly explored it. Phillip, the John Smith of Australia, governed the first successful settlement on the continent. The original colony was located at Botany Bay, just south of Port Jackson. Later, in 1788, Phillip established the permanent colony on Sydney Cove. This round bay, now called Circular Quay, is the business center of modern Sydney.

Phillip's settlers were mostly men convicted in English courts of minor offenses. They were allowed to serve their terms in the new colony and later remain as residents. In 1851 convict immigration ended. England's North American colony of Georgia had a similar early history of convict settlement.

NOTE: Sydney is shown on the National Geographic Society's map of the Pacific Ocean and the Bay of Bengal. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For further information, see "Sydney Faces the War Front Down Under," in the *National Geographic Magazine* for March, 1943*; "The Making of an Anzac," April, 1942; and "Capital Cities of Australia," December, 1935. (*Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.*)

BRANSON DE COU FROM GALLOWAY

JUNIOR WALLABY WARILY WATCHES THE WORLD FROM THE SAFETY OF HIS MOTHER'S POUCH

This family in Sydney's zoo entertains company. Small and medium kangaroos are called wallabies. They are marsupials; they carry their young in abdominal pouches after birth. Australian members of the order include the wombat, bandicoot, and Tasmanian wolf. America's opossum is a marsupial, the only one native to non-Australian regions.

Veterans Homestead in Buffalo Bill's Area

OPENING of the Heart Mountain Unit of the Shoshone Reclamation Project brings back echoes of the old West. Veterans moving into the rich, irrigated valley, near Cody in northwest Wyoming, are obtaining their land under provisions of the Reclamation Law and the Homestead Act, the latter of which had so much to do with the speedy settling of the West in the last century.

Also, William F. Cody, who as "Buffalo Bill" symbolized adventure for countless American boys of one and two generations ago, is associated with the area. In recognition of "the last of the frontier scouts," Congress and President Truman last year gave the name "Buffalo Bill Dam and Reservoir" to the dam and lake which make it possible to reclaim land along the upper Shoshone. For the previous 36 years those features went under the name "Shoshone."

Buffalo Bill Gave Water Rights to the United States

The change was justified. Although best known for his exploits against Indians and later for his spectacular Wild West Show, Cody also was a moving figure in farsighted enterprises for developing the Rocky Mountain region. He was aware that a plentiful and constant water supply was necessary if farming was to succeed in dry areas.

Cody became interested in establishing an irrigation project in the Shoshone River valley. At the opening of the 20th century he obtained water rights and turned them over to the United States government when the latter agreed to construct a dam and reservoir under the newly enacted Reclamation Law.

The site chosen was west of the infant community of Cody. Named for Buffalo Bill, the town was eager to profit not only from its Western-frontier atmosphere but from its nearness to Yellowstone National Park. Now the thriving resort contains many mementos of its famous namesake; even the house in which he was born has been moved there.

In a steep, narrow canyon where the Shoshone River foamed over a rocky bed, engineers worked for four years to build a concrete dam 328 feet high. For a while after the wedge of masonry was finished in 1910, it was the highest dam in the world.

Shoshone Means "Stinking Water"

Behind this wall spreads a reservoir ten miles long and four miles wide, large enough to hold 148½ billion gallons of water. The lake is capable of irrigating 300,000 acres of land that otherwise might remain idle.

The Shoshone River flows through some of the West's most magnificent scenery. It empties into the Bighorn River (illustration, page 8). Shoshone means "stinking water," and was so named by the Indians because of its sulphur content. Near Cody a warm sulphur spring, locally called the Needle Plunge, bubbles from the riverbank. The area around the effervescent waters was neutral ground for Indians; warring tribes encamped there to bathe and drink.

Ranches have sprung up in the Shoshone country, not only to raise

vegetable oils. Cement, soap, cotton cloth, and matches were among the many products manufactured for local use. Many wares were received at Macau docks from Europe and America for transshipment to China. They were sent upcountry over inland waterways in small boats.

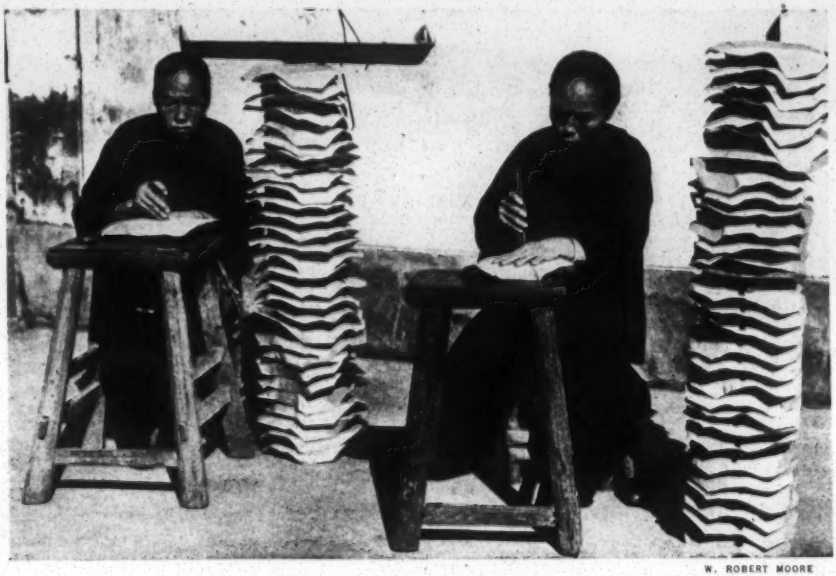
The demand for junks, sampans, and like craft created for Macau a boatbuilding industry which keeps many men busy. Originally developed as a gateway of trade between East and West, Macau has continued its maritime interests through all its history. It was in return for their help in suppressing the coastal pirates that China, in 1557, granted the Portuguese permission to stay on the little spot of land where they had been more or less holding squatters' rights for 20 years.

When Spain dominated Portugal, from 1581 to 1640, Macau alone of all the Portuguese dominions continued to fly the flag of the mother country. Those colors have flown continuously over Macau for 400 years.

After the British acquired Hong Kong, about 40 miles east of Macau, a century ago, and new China treaty ports were opened, Macau lost most of its overseas trade. Sampans and fishing junks, with their matting sails, dominated the harbor where once great clipper ships had come to exchange the wares of the West for the tea and fruit of the Orient.

NOTE: Macau appears on the Society's map of China.

See also, "Coastal Cities of China," in the *National Geographic Magazine* for November, 1934; and "Macao, 'Land of Sweet Sadness'," September, 1932.



W. ROBERT MOORE

SITTING QUIETLY AT STURDY TABLES, MACANESE WOMEN PREPARE FOR A NOISY CELEBRATION

Whether these firecrackers will go "Bang!" on Christmas, New Year's, Fourth of July, or other holidays depends on which part of the world is to receive them. Heavy paper is rolled into small cylinders, then covered with bright, thin paper. The Chinese custom of yellow for top-flight royalty and green for princes lingers. These colors sometimes vary the usual red. Taking a handful of the tubes, the artisan ties them together and pastes paper over top and bottom. She punches a hole in the tops with a bamboo stick and inserts two layers of clay with gunpowder sandwiched between, and a fuse. To harden the clay the crackers are soaked in water and set in the sun to dry before being woven into packs by their little fuse-tails.

Balsa Graduates from Model to Real Airplanes

AIR freight is opening a new peacetime field for balsa, the feather-weight wood best known in the United States as a material for making model planes. To save tonnage, balsa wood will be used to make the packing crates for many products which are zooming across oceans and continents in "flying boxcars."

But balsa's most dramatic promotion came during World War II, when it was used as plywood in building the 400-mile-an-hour British Mosquito bombers. Toward the war's close, sheets of balsa were bonded firmly with sheets of aluminum alloy for extremely light warplane construction. A thousand and one other wartime services were contributed by balsa.

Balsa Grows 12 Feet in First Year

The word balsa means raft in Spanish. Conquistadors, 400 years ago, found Indians along tropical New World coasts using rafts of very light logs. The Spanish word became the designation for the trees of genus Ochroma lagopus, as well as for the cellular lumber cut from the trees.

Although balsa grows in a dozen varieties from southern Mexico to Peru, the tree does its best in the well-drained, moist soil of the jungles along Ecuador's Guayas River and its tributaries. It springs from floss-covered seed to 12-foot stalks in a year. In about seven years it reaches its best market stage—50 to 60 feet high, two and one-half feet in diameter.

Weighing half as much as cork, dried balsa is one-tenth thin-walled cells and nine-tenths air. The closely packed fibers of other woods are missing. Balsa weighs only seven pounds to the cubic foot, whereas some woods weigh as much as 80 pounds. Balsa can easily be dented with the fingernail. It has a velvety feel and an oyster-white color, sometimes tinged in shades from pink to brown. It is the lightest wood having sufficient strength and stiffness for commercial usefulness.

Balsa plantations, a new development, take advantage of the fact that the trees thrive as second growth on such clearings as abandoned banana land. They provide logs of greater uniformity than does haphazard jungle growth. The trees, easily felled, are hauled by oxen to the rivers, tied into big rafts, and floated to the mills. The rafts are often heaped with cargoes of bananas.

Ecuador and Costa Rica Filled United States Needs

World War I brought balsa from the oblivion of the tropical jungles and put it to work in life preservers and rafts. The British used the wood in 80,000 submarine floats that supported their extensive mine barrage in the North Sea.

Between world wars, hardly a boy went through his teens without making a balsa-wood model airplane. Balsa mills in Ecuador and Costa Rica met most of the United States demand for 5,000,000 board feet a year, two-thirds of which was used in model airplanes.

The balsa influx brought the day when stagehands could pick up "brick walls" with ease, clowns and children (illustration, page 10) could lift "impossible" weights, and timbers falling down around movie stars' heads left them neither bloody nor bowed.

grain and cattle and sheep but to entertain the "dudes" who have found it a pleasant vacation country. Between the reservoir and the east entrance to Yellowstone is Shoshone National Forest, oldest in the United States. Evergreen trees blanket the sides of the Absaroka Mountains.

Buffalo Bill lived for seven years after the $1,439,000 dam and reservoir were put into operation. In the latter part of his career he gathered together a band of cowboys and Indians to present his Wild West Show through the United States and Europe.

But the West remembers him first as a youthful Pony Express rider and then as an Army scout who was active in campaigns against the Sioux and Cheyenne Indians. Cody acquired the name Buffalo Bill in 1867. He contracted to furnish buffalo meat for railroad construction workers in Kansas. In 18 months he was credited with killing 4,280 of the animals. His day's peak was 69.

NOTE: Buffalo Bill Reservoir, the town of Cody, and other features of the Shoshone region may be located on the Society's map of the United States.

For additional information on the area, see "Grass Makes Wyoming Fat," in the *National Geographic Magazine* for August, 1945*; "Indians of Our Western Plains," July, 1944; and "Fabulous Yellowstone," June, 1940.

CHARLES J. BELDEN

BELOW CODY THE SHOSHONE RIVER JOINS THE BIGHORN TO THREAD BIGHORN CANYON

This tortuous chasm, in some places 2,000 feet deep, cuts across the Wyoming-Montana border east of the Shoshone Reclamation Project. In strong contrast to these barren cliffs, the reclaimed lands of the project make green and fruitful farms for homesteading families.

UNESCO Tackles Amazon Transport Problem

VIRTUALLY untapped because difficult to approach are the abundant forest and mineral resources of the Amazon (Amazonas) River basin. How to open them up to modern transportation is one phase of research on the vast jungle recently authorized by UNESCO (United Nations Educational, Scientific, and Cultural Organization).

The tropical Amazon basin, nearly as large as the United States, covers more than one-third of South America. Low levels, high humidity, and heavy rainfall account for its countless streams and lush forests choked with undergrowth. Transportation is limited to the river boat and the native Indian carrier.

Jungles Overrun Highways

Marvelous feats of highway and railroad engineering have brought high Andes plateaus of neighboring Peru, Bolivia, and Chile close to Pacific ports. But there has been little such construction in the Amazon basin. The fast-growing jungles quickly swallow roads and railways.

Lying largely in Brazil, the Amazon basin reaches into Peru, Bolivia, Ecuador, Colombia, Venezuela, and British Guiana. Rains that total as much as 200 inches a year cause floods and make large, low-level areas impassable. Native Indians, numbering only a few hundred thousand altogether, and *Caboclos* (illustration, cover) are the only people to penetrate much of the land away from the rivers.

A score of big rivers (illustration, page 12) among some 1,100 tributaries add their flow to the giant Amazon, giving it by far the greatest water volume of all the world's streams. Only the Nile and the Missouri-Mississippi rival its 4,000-mile length.

The Amazon has been called the South American Mediterranean. The largest ocean steamers afloat, moving along its lower reaches completely out of sight of land, can ascend 1,000 miles to Manaus (Manáos) in low-water season. In high-water months they can cover a second thousand miles to Iquitos, Peru. Small steamers ply still another 500 miles up the Marañon above Iquitos.

The fact that the forest-lined Amazon system totals 16,000 miles of steamer-navigable waterways demonstrates that bridgebuilding would be a big part of the engineering battle in Amazon basin railroad and highway construction.

War Revived Rubber Development

Natural rubber first entered world commerce from wild trees of the Amazon basin. Reaching a peak export output of 42,000 tons in 1912, rubber built the fantastic jungleland boom city of Manaus. The Amazon rubber empire failed soon after. The same Brazilian rubber stock grown in vast plantations of southeast Asia and the East Indies exceeded a million export tons by 1940.

Rubber plantations were started in 1927 on the Amazon's Tapajóz tributary in Pará State. Production was still small when the search for wild Brazilian rubber was urgently resumed during World War II. At the end of 1945, the plantations were transferred from their North Ameri-

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With the 1930's the role of the cellular wood in industry became increasingly apparent. Balsa found wide use in truck bodies, refrigerators, and incubators as insulation against heat and cold. In airplane cabins, offices, living rooms, and packing cases it served as a cushion against sound, vibration, and temperature changes.

NOTE: Regions where balsa grows may be located on the Society's map of South America, and its map of Mexico, Central America, and the West Indies.

For additional information, see "From Sea to Clouds in Ecuador," in the *National Geographic Magazine* for December, 1941; and "Arch-Isolationists, the San Blas Indians," February, 1941*.

LUIS MARDEN

TO LIFT HER WEIGHT IN BALSA WOOD SHE WOULD HAVE TO CARRY FOUR OR FIVE SUCH PLANKS

Standing in front of a balsa sapling, a young girl in Limón, Costa Rica, dramatizes the almost unbelievable lightness of the "model airplane wood." This man-sized timber weighs only eight and one-half pounds. Costa Rican balsa is thoroughly dried in steam kilns, reducing its weight by half.

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can developers to the Brazilian government.

To speed raw rubber by air in wartime, landing fields were hewn at several points in the forests south of the Amazon and west to Peru. Planes were flown from Belém to Manaus and to air depots along the upper Amazon and Madeira rivers. Manaus continues active as the center of wild-rubber collection under the extended contract between the United States and Brazil.

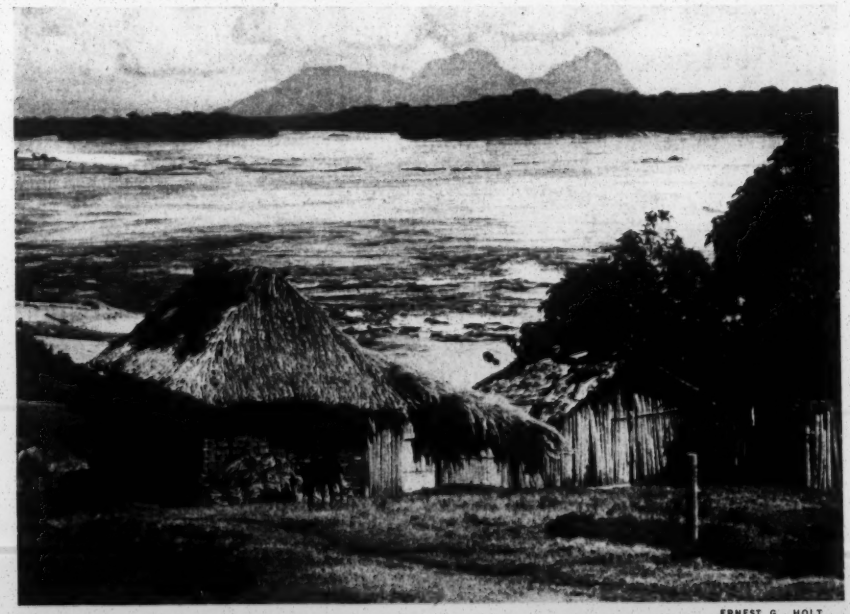
Hardwoods like mahogany, ebony, and rosewood are plentiful in the forests, as are other commercial woods—even featherweight balsa. Brazil nuts and cocoa beans are established exports. A variety of oilseeds and medicinal plants are gathered.

Coffee, cotton, tobacco, and sugar cane, well established as Brazilian crops, are grown in some parts of the Amazon basin. Known mineral deposits include gold, iron, manganese, chromium, nickel, and aluminum. Petroleum reserves on the Peruvian edge of the basin are reached by road over the Andes from the Pacific.

NOTE: The Amazon basin may be located on the Society's map of South America.

For additional information, see "Brazil's Potent Weapons," in the *National Geographic Magazine* for January, 1944*; "Air Cruising Through New Brazil," October, 1942; "Journey by Jungle Rivers to the Home of the Cock-of-the-Rock," November, 1933; and "The Amazon, Father of Waters" and "Exploring the Valley of the Amazon in a Hydroplane," April, 1926.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, January 27, 1947, "Brazil Jungle Hides Chavantes, Other Tribes."



ERNEST G. HOLT

THE BROAD RIO NEGRO AT SÃO GABRIEL TUMBLES THROUGH 25 MILES OF RAPIDS

This tiny Brazilian village looks big on maps; it is the largest "town" for hundreds of miles. The Rio Negro, largest northern tributary of the Amazon, here leaves the low platform of the Guiana highlands and enters the level floor of the jungle-choked Amazon basin. Serra Curicuriari (Curicuriary), rising in the distance, is typical of several such abrupt mountain masses in this region.